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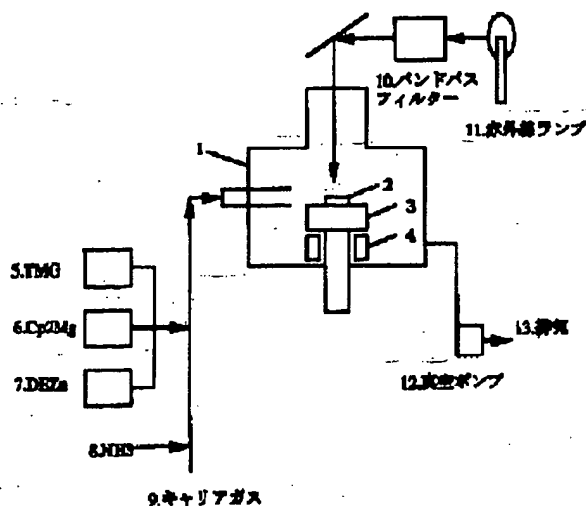
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TITLE : MANUFACTURE OF GALLIUM NITRIDE
COMPOUND SEMICONDUCTOR



ABSTRACT : PROBLEM TO BE SOLVED: To reduce resistance of a gallium nitride based semiconductor layer, by a method wherein, while a gallium nitride based semiconductor layer doped with P-type impurities is grown by using an organic metal compound vapor deposition method, or after the layer is grown, the layer is irradiated with infrared rays, at a high temperature.

SOLUTION: A sapphire substrate 2 is set on a susceptor 3 installed in a reaction furnace. After the inside of the furnace is vacuumized, the substrate is heated in a hydrogen atmosphere, by using an RF coil 4, and cleaned. The substrate is cooled, and a GaN buffer layer is grown by making trimethyl gallium(TMg), NH_3 and hydrogen as carrier flow. Supply of TMG only is stopped, the growth temperature is raised up to, e.g. 1050°C , and the substrate growth surface begins to be irradiated with infrared rays by using an infrared lamp 11. The wavelength of infrared rays is adjusted, e.g. in the range of $3200\text{--}3800\text{cm}^{-1}$ by using a bandpass filter 10. A GaN film doped with Mg is grown by making TMG again flow and further making Cp_2Mg flow.

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